

Application of Spectral Imaging to Transgenic Corn Monitoring

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Transgenic crops containing pesticidal traits are regulated by the U.S. Environmental Protection Agency (U.S. EPA) under the Federal Insecticide, Fungicide and Rodenticide Act. The U.S. EPA has declared crops engineered to contain a bacterial gene from *Bacillus thuringiensis* (Bt) to be “in the public good” due to their potential to create higher crop yield with lower applications of insecticide. In order to protect that public good and to preserve the utility of the microbial Bt pesticide used by organic farmers, the U.S. EPA has imposed conditions on the use of Bt crops that are designed to prevent or delay the development of insect resistance to the Bt toxin.

The use of remote sensing to detect herbivory levels has increasing utility in a wide variety of systems and may prove to be a powerful tool with which to test insect population models and insect management techniques. Here we present preliminary evidence based on 2004 growing season research that airborne imagery can be used to distinguish Bt corn from conventional corn and detect areas of pest infestation. The use of remote imagery may be a cost-effective way to monitor the >20 million acres of Bt corn for the detection of pests resistant to the pesticidal crop trait.